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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,380	06/27/2003	Toshiyuki Miyamoto	50212-512	5140

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MCDERMOTT WILL & EMERY LLP  
600 13TH STREET, N.W.  
WASHINGTON, DC 20005-3096

EXAMINER
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HUGHES, DEANDRA M

ART UNIT	PAPER NUMBER
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3663

DATE MAILED: 06/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/607,380

Applicant(s)

MIYAMOTO ET AL.

Examiner

Deandra M Hughes

Art Unit

3663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12/6/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 6-19 is/are rejected.
- 7) ☐ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/28/03, 6/28/02, 6/27/03; 12/6/04
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Spock (US 6,496,305 filed Jul. 23, 2001).

\*\*The references to the prior art made herein are done so for the convenience of the applicant. They are in no way intended to be limiting. The prior art should be considered in its entirety.

With regard to claim 1, Spock discloses an optical transmission system comprising

- a transmitter (fig. 9, into #100 or #102) outputting signal light in which a plurality of signal channels with an optical frequency spacing of 400 GHz or more but 12.5 THz or less are multiplexed (col. 8, lines 5-10; col. 7, lines 44-50);
- an optical fiber transmission line transmitting the signal light (e.g. fig. 9, #42);

Art Unit: 3663

- and Stimulated-Raman-Scattering means including at least part of said optical fiber transmission line as an optical fiber for Raman amplification, and Raman-amplifying the signal light by supplying Raman amplification pumping light (col. 2, lines 30-40).

3. Claims 1-2, 5, and 7-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Adams (US 6,785,472 filed Jun. 15, 1999).

With regard to claim 1, Adams discloses an optical transmission system comprising

- a transmitter (fig. 1, #130) outputting signal light in which a plurality of signal channels with an optical frequency spacing of 400 GHz or more but 12.5 THz or less are multiplexed (col. 3, lines 13-30);
- an optical fiber transmission line transmitting the signal light (e.g. fig. 2, #101);
- and Stimulated-Raman-Scattering means including at least part of said optical fiber transmission line as an optical fiber for Raman amplification, and Raman-amplifying the signal light by supplying Raman amplification pumping light (col. 4, lines 64-68; col. 5, lines 1-10).

With regard to claim 11, Spock discloses an optical transmission system comprising:

- a transmitter (fig. 1, #130) outputting signal light in which a plurality of signal channels with an optical frequency spacing of 400 GHz or more but 12.5 THz or less are multiplexed (col. 3, lines 13-30);

Art Unit: 3663

- an optical fiber transmission line transmitting the signal light (e.g. fig. 2, #101);
- Stimulated-Raman-Scattering means including at least part of said optical fiber transmission line as an optical fiber for Raman amplification (col. 4, lines 64-68), includes:
  - o a pumping light source which supplies Raman amplification pumping light containing at least one pumping channel multiplexed to part of said optical fiber transmission line and Raman-amplifying the signal light by supplying the Raman amplification pumping light (col. 5, lines 1-10);
  - o wherein an optical frequency (pumping light is at 1465nm which has a peak at 1565nm; col. 5, lines 20-21 and 32) of each pumping channel contained in the pumping light is so set as to locate a peak of Raman gain at an optical frequency different from an optical frequency of each signal channel contained in the signal light (fig. 3 discloses that 1565nm is between channels).

With regard to claim 2, 20nm is more than 10nm (col. 3, line 14).

With regard to claim 5, fig. 4, NODE #301 may be considered the reception end.

With regard to claim 7, losses at about 0.3 db/km is disclosed (col. 4, lines 44-45).

With regard to claims 8, 12-15, 19, 1465nm is between adjacent channels (fig. 3).

With regard to claims 9-10, the Examiner considers the threshold value to be a the transmission loss value of the fiber (col. 4, line 44-45).

With regard to claims 1-176, one pumping channel is disclosed.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Adams (US 6,785,472 filed Jun. 15, 1999) in view of Agrawal (Fiber-Optic Communication Systems; May 28, 2002).

Adams does not specifically claim that the Raman amplifiers are lumped amplifiers. However, Agrawal teaches the use of lumped amplifiers to minimize dispersion (pgs. 420-422). It would have been obvious to one of ordinary skill in the art (e.g., an optical engineer) to use lumped amplifiers for the advantage of minimizing dispersion of the optical signal.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Adams (US 6,785,472 filed Jun. 15, 1999) in view of Yu et al. (Optimisation of wavelength spacing in a WDM transmission system in the presence of fibre Nonlinearities, 1995).

Adams does not specifically disclose a negative dispersion fiber. However, Yu teaches dispersion compensation in wide channel spaced transmission systems (Section 3.2). It would have been obvious to one of ordinary skill in the art (e.g., an

Art Unit: 3663

optical engineer) to use negative dispersion fiber for the advantage of minimizing four wave mixing.

***Allowable Subject Matter***

7. Claim 4 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter. The prior art does not teach or make obvious *a lumped amplifier with a structure for guiding excess Raman amplification light*.

***Specification***

9. The abstract of the disclosure is objected to because it is too long. The abstract should be 150 words or less. Correction is required. See MPEP § 608.01(b).

***Information Disclosure Statement***

10. The information disclosure statement (IDS) filed on Dec. 6, 2004 has been considered by the Examiner. Further, the IDS filed June 27, 2003 has been considered with the exception of one item, which has been lined through. This item was not considered because a copy of the reference was not provided.

***Conclusion***


11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hamoir, Kakui, Tanaka, Tsuzaki, Miyamoto, and Yu disclose optical communication systems with wide channel spacings.

Art Unit: 3663

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deandra M Hughes whose telephone number is 571-272-6982. The examiner can normally be reached on M-F, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H Tarcza can be reached on 571-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Deandra M Hughes  
Examiner  
Art Unit 3663